



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/775,075      | 02/11/2004  | Kensaku Shinozaki    | 042100              | 3422             |

38834 7590 01/18/2006

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP  
1250 CONNECTICUT AVENUE, NW  
SUITE 700  
WASHINGTON, DC 20036

EXAMINER

VAN, LUAN V

ART UNIT PAPER NUMBER

1753

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/775,075

Applicant(s)

SHINOZAKI, KENSAKU

Examiner

Luan V. Van

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/11/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election without traverse of claims 1-6 in the reply filed on 12/23/05 is acknowledged.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims state the limitations of "and according to need". It is unclear how one skilled in the art would determine when the coupling agent layer would be needed. It is suggested that phrase be changed to -- or --.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1753

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Fatcheric et al..

Regarding claim 1, Fatcheric et al. teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (figure 2) and a surface roughness of 4-7.5 micrometer (on the matte side, column 3 lines 19-21). The rough surface can be broadly interpreted to mean the shiny side or the matte side.

Regarding claim 2, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface having said knob-like projections and said surface roughness of 4-7.5 micrometer is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (column 5 lines 7-10) through the foil for a predetermined time (column 5 lines 7-10) in an electroforming bath.

Regarding claim 3, Fatcheric et al. teach an electrodeposited copper foil, wherein said electroforming bath is an acidic electroforming bath containing arsenic (column 5 lines 7-17).

Regarding claim 4, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 7-17).

Regarding claim 5-6, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer and at least one layer of nickel plating, zinc plating, cobalt plating, plating of an alloy of the same

Art Unit: 1753

(column 5 lines 13-20) and a chromate treatment layer (column 5 lines 21-23) on that, or further formed with a coupling agent treatment layer (column 5 lines 21-24) .

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolski et al. '140 .

Regarding claim 1, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 2.1 micrometer (on the matte side, see example 2 in table 2 and table 3).

Regarding claim 2, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 2.1 micrometer (on the matte side, see example 2 in table 2 and table 3) is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (table 1) through the foil for a predetermined time in an electroforming bath. The electrolysis is inherently performed for a predetermined time.

Regarding claim 4, Wolski et al. '140 teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 30-35).

Art Unit: 1753

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolski et al. '140 in view of Fatcheric et al.

Wolski et al. '140 teach the copper foil as described above. The difference between the reference to Wolski et al. '140 and the instant claims is that the reference does not explicitly teach forming an additional nickel, zinc, cobalt layer or alloy thereof and a chromate layer.

Fatcheric et al. teach an electrodeposited copper foil, wherein said electroforming bath is an acidic electroforming bath containing nickel, cobalt, zinc or arsenic for depositing the respective metal or alloys thereof (column 5 lines 7-17). Additionally,

Art Unit: 1753

Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer and at least one layer of nickel plating, zinc plating, cobalt plating, plating of an alloy of the same (column 5 lines 13-20) and a chromate treatment layer (column 5 lines 21-23) on that, or further formed with a coupling agent treatment layer (column 5 lines 21-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the foil of Wolski et al. '140 by depositing a zinc layer of Fatcheric et al., because the zinc layer provides a barrier layer between the copper foil and the laminating resin substrate in order to prevent laminate staining which occurs when ingredients of the resin chemically react with copper (column 4 lines 50-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the foil of Wolski et al. '140 by depositing a chromate layer of Fatcheric et al., because it would provide a protective layer for the underlying barrier layers (column 5 lines 21-22).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. Wolski et al. '619, Karwan, Hutkin, and Chiu et al. teach a similar method of forming a copper foil.

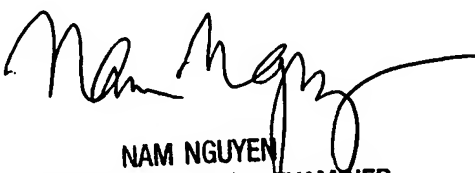
Art Unit: 1753

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LVV  
1/13/06

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700